



SECTION 621

FLOWABLE BACKFILL

621.1 Description. This work shall consist of furnishing flowable backfill as specified on the plans or otherwise permitted for compacted backfill and other cavity filling uses.

621.2 Material.

621.2.1 All material shall be in accordance with Division 1000, Material Details, and specifically as follows:

Item	Section
Fly Ash	1018
Cement	1019
Admixtures	1054
Water	1070

621.2.2 Fine aggregate shall be in accordance with [Sec 1005.3](#), except for the percent passing the No. 200 (75 μ m) sieve. Aggregate shall be fine enough to stay in suspension in the mortar to the extent required for proper flow, and shall be in accordance with the following gradation:

Sieve Size	Percent Passing
3/4 inch (19.0 mm)	100
No. 200 (75 μ m)	0-10

621.3 Composition of Mixture. The contractor shall submit to the engineer a mix design with the proportions and source of material, admixtures, dry cubic yard (m^3) batch weights (masses) and actual 28-day compressive test results. The 28-day compressive strength of the mixture shall exceed 50 psi (345 kPa).

621.3.1 Consistency. Flowable backfill will be tested by filling an open-ended 3-inch (75 mm) diameter, 6-inch (150 mm) high cylinder to the top with the mixture and immediately pulling the cylinder straight up. The correct consistency of the mixture shall produce an approximate 8-inch (200 mm) diameter circular-type spread with no segregation. Adjustments to the proportions of fine aggregate or water may be made to achieve proper solid suspension and optimum flowability with approval from the engineer, except the theoretical yield shall be maintained at one cubic yard (m^3) for the given batch weights (masses).

621.3.2 Commercial Mixtures. Approved commercial brand mixtures intended specifically for use as flowable backfill may be used, provided the specified strengths are obtained.

621.3.2.1 If approved for use, the material shall be placed in accordance with the manufacturer's recommendations, and a copy of the manufacturer's recommendations shall be furnished to the engineer.

621.3.2.2 The manufacturer shall submit a request for approval along with appropriate documents to Construction and Materials for testing and evaluation. Upon approval of the material, the brand name will be placed on a list of qualified commercial brand flowable backfill material.

621.4 Construction Requirements.

621.4.1 The open ends of the area to be backfilled shall be plugged, and the void area filled without the use of a vibrator.

621.4.2 Care shall be taken to prevent the movement of any structure from the designated location or intrusion of flowable backfill into undesirable locations. If such movement or intrusion occurs, the engineer may require the affected structure to be excavated and replaced to the proper grade at the contractor's expense.

621.4.3 If flowable backfill is placed in more than one layer, the base layer shall be thoroughly roughened and all loose and foreign material removed before placing the next layer.

621.4.4 No flowable backfill shall be covered or accepted until a minimum compressive strength of 30 psi (205 kPa) has been attained, as demonstrated by failure to deform or crush underfoot when a pressure of approximately 30 psi (205 kPa) is applied. If the backfill does not harden to support the required load, the backfill shall be removed and replaced with an acceptable material at the contractor's expense.

621.5 Method of Measurement. Final measurement will not be made except for authorized changes during construction or where appreciable errors are found in the contract quantity. The revision or correction will be computed and added or deducted from the contract quantity. If flowable backfill is specified, where required, measurement will be made by the computed volume to the nearest 1/10 cubic yard (0.1 m³) of the voids to be filled, as determined from the dimensional area of the open area and totaled to the nearest cubic yard (m³). If flowable backfill is used as an alternate to compacted backfill specified in the contract or as shown on the plans, measurement will be made as required for the item specified.

621.6 Basis of Payment. If flowable backfill is specified, the accepted quantity will be paid for at the contract unit price. No additional payment will be made if flowable backfill is used as an alternate to compacted backfill.